

### **REMARKS**

Claims 1, 3-5, 13, 15-21 and 23-31 remain pending in the present application. Claims 1, 5, 13, 21 and 31 have been amended in the present application. The basis for the above amendments may be found throughout the specification, drawings and claims as originally filed. The Examiner is respectfully requested to reconsider and withdraw his rejections in view of the above amendments and remarks as set forth below.

### **DRAWINGS**

The Examiner objects to the drawings under 37 C.F.R. 1.83(a) for not showing every feature of the invention specified in the claims. A corresponding request for proposed drawing changes is being filed concurrently herewith in a separate letter in response to the objections to the drawings contained within the Office Action. The changes made to the drawings are fully described in the request. Applicant has also made minor changes to the specification. It should be noted that the capacitor was disclosed in the specification as originally filed (e.g., see, pg. 27, line 15 thru pg. 28, line 7), and thus does not constitute new matter. Applicant submits that these changes serve to overcome the objections. Accordingly, Applicant will forward the formal drawings upon receipt of a Notice of Allowance.

### **REJECTION UNDER 35 USC §112**

The Examiner has rejected Claims 1, 3-5, 13, 15-21 and 23-26 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant kindly acknowledges the Examiner's examples and has amended Claims 1, 5, 13 and 21 to individually address these examples. Applicant now believes that all pending claims particularly point out and distinctly claim the subject matter of the present invention. Therefore, reconsideration and withdrawal of this rejection is respectfully requested.

### **REJECTIONS UNDER 35 USC §102**

Claims 1, 2, 5-7, 13, 14, 17-18, 20-23, 26-27 and 30-31 stand rejected under 35 USC §102(b) as being unpatentable over U.S. Patent No. 5,289,301 (Brewer). Applicant respectfully traverses this rejection.

Brewer is directed generally to a liquid crystal display device. Of particular interest, Brewer discloses an electronic control module 9 which includes an integrated circuit 10 and a resistor element 19 or 22. However, Applicant notes that neither the integrated circuit 10 or the resistor elements 19, 20 are mounted to the substrates 2, 3 which house the liquid crystal 7. In other words, Brewer does not teach or suggest a liquid crystal display device having an integrated means for adjusting the voltage imposed on the liquid crystal.

Similarly, Applicant's claimed invention is directed to a liquid crystal display device. The liquid crystal display device generally includes a liquid crystal

disposed between a pair of substrates. Additionally, Claim 1 recites "a driving integrated circuit (IC) mounted on one of the pair of substrates" and "a resistance element having an adjustable resistance value is disposed on at least one of the pair of substrates to change the voltage imposed on the liquid crystal" in combination with the other elements recited in the claim. In this way, the voltage supplied to the liquid crystal display device by the host equipment may be fixed to a given voltage, and yet the voltage imposed on the liquid crystal can be adjusted to a prescribed value which is suitable to operate the liquid crystal. Moreover, an optimum display contrast may be achieved by adjusting the resistance value of the resistance element disposed on the substrate. Therefore, it is respectfully submitted that Claim 1, along with claims depending therefrom, defines patentable subject matter over Brewer.

Applicant notes that independent Claims 5, 13, 21 and 31 are directed to similar subject matter, and thus should be allowable, along with claims depending therefrom, for the same reasons as Claim 1.

Applicant further notes that independent Claims 27 and 30 are also directed to a liquid crystal display device. In addition to the integrated circuit (IC), these claims recite "a capacitor located between the first and second substrates, connected to said liquid crystal driving IC for stabilizing the voltage imposed on said liquid crystal" in combination with the other elements recited in the claim. The capacitor stabilizes the voltage output from the liquid crystal driving integrated circuit as noted on page 27, line 15 thru page 28, line 7 of the specification.

The Examiner asserts that Figure 8 of Brewer discloses a capacitor for stabilizing the voltage imposed on the liquid crystal. However, Figure 8 illustrates a preferred embodiment for the integrated circuit 10. As noted above, the integrated circuit is not mounted to the substrates 2, 3 which house the liquid crystal 7. Moreover, Brewer does not teach or suggest a capacitor electrically connected externally to the integrated circuit 10 for stabilizing the voltage output by the integrated circuit, and thus imposed on the liquid crystal. Therefore, it is respectfully submitted that Claims 27 and 30, along with claims depending therefrom, also define patentable subject matter over Brewer.

#### **CONCLUSION**

All of the stated grounds for rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and further requests that they be withdrawn. Accordingly, it is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at (248) 641-1600.

Prompt and favorable consideration of this response is respectfully  
requested.

Respectfully submitted,

Dated: September 3, 2002

Harness, Dickey & Pierce, P.L.C.  
P.O. Box 828  
Bloomfield Hills, MI 48303  
(248) 641-1600

GGs/TDM/mas

By: \_\_\_\_\_

  
G. Gregory Schriley

Reg. No. 27,382

Bryant E. Wade

Reg. No. 40,344

Attorneys for Applicants

## **ATTACHMENT FOR SPECIFICATION AMENDMENTS**

The following is a marked up version of each replacement paragraph and/or section of the specification in which underlines indicate insertions and brackets indicate deletions.

On page 27, the second paragraph is replaced with the following paragraph:

The voltage dividing circuit using the printed resistors 40 as the peripheral circuit is contemplated in the embodiment of FIG. 9. However, a peripheral circuit applicable thereto may include any arbitrary electronic elements other than the resistance elements, for example, capacitors 42. The employment of the peripheral circuit including the capacitors can stabilize the voltage output from the liquid crystal driving IC and generate a voltage having other value at internal of the liquid crystal driving IC, by utilizing a voltage input to the input terminal of the liquid crystal driving IC. To form the capacitors in a narrow gap formed between the pair of transparent substrates, the electrodes of the confronting substrates can be connected to each other by upper/lower conductors likewise the stripe-shaped electrodes for driving the liquid crystal, although a dielectric may be or may not be sandwiched between confronting ITOs.

## **ATTACHMENT FOR CLAIM AMENDMENTS**

The following is a marked up version of each amended claim in which underlines indicates insertions and brackets indicate deletions.

1. (Twice Amended) A liquid crystal display device for displaying a visible image by controlling an alignment of a liquid crystal disposed between a pair of substrates by imposing a drive voltage on the liquid crystal through at least one electrode, comprising:

a driving integrated circuit (IC) mounted on one of the pair of substrates and operable to supply the drive [a first] voltage to the at least one electrode;

a resistance element having an adjustable resistance value<sub>1</sub> [is] disposed on at least one of the pair of substrates<sub>1</sub> and electrically connected to the driving IC, wherein an input [a second] voltage for operating the driving IC is capable of being varied based on the resistance value of the resistance element and the drive [first] voltage is capable of being varied based on the value of the input [second] voltage.

5. (Twice Amended) A method of manufacturing a liquid crystal display device for displaying a visible image by controlling an alignment of a liquid crystal disposed between a pair of substrates by imposing a drive voltage on the liquid crystal through at least one electrode, wherein the method is comprised of the following steps of:

mounting a driving integrated circuit (IC) on at least one of the pair of substrates, the driving IC operable to supply the drive [a first] voltage to the at least one electrode;

mounting a resistance element having an adjustable resistance value on at least one of the pair of substrates, the resistance element being electrically connected to the driving IC; and

adjusting the resistance value of the resistance element so as to adjust an input [a second] voltage for operating the driving IC, wherein the drive [first] voltage is varied based on the value of the input [second] voltage.

13. (Twice Amended) A liquid crystal display device comprising:

a first substrate;

a second substrate opposite said first substrate;

a liquid crystal disposed between said first and second substrates;

a plurality of electrodes disposed on at least one of the substrates, wherein a drive voltage is imposed on the liquid crystal through at least one of the plurality of electrodes;

a driving integrated circuit (IC) mounted on at least one of the substrates and operable to supply the drive [a first] voltage to the at least one of the plurality of electrodes; and

a resistance element having an adjustable resistance value, disposed on one of said first and second substrates, and electrically connected to the driving IC, wherein an input [a second] voltage for



operating the driving IC is capable of being varied based on the resistance value of the resistance element and the drive [first] voltage is capable of being varied based on the value of the input [second] voltage.

21. (Twice Amended) A liquid crystal display device for displaying a visible image, comprising:

a first substrate;

a second substrate opposite said first substrate;

a liquid crystal disposed between said first and second substrates;

a plurality of electrodes disposed on at least one of the substrates,

wherein a drive voltage is imposed on the liquid crystal through at least one of the plurality of electrodes;

a driving integrated circuit (IC) mounted on one of the substrates and operable to supply the drive [a first] voltage to the at least one of the plurality of electrodes; and

a resistance element having an adjustable resistance value, [is] disposed on at least one of said first and second substrates, and [is] electrically connected to the driving IC, wherein an input [a second] voltage for operating the driving IC is capable of being varied based on the resistance value of the resistance element and the drive [first] voltage is capable of being varied based on the value of the input [second] voltage, thereby changing the voltage applied to the liquid crystal.

31. (Amended) A display device comprising;  
a substrate;  
a driving IC, mounted on the substrate, for driving the display device; and  
a resistance element disposed on the substrate and electrically connected to the driving IC, the resistance element [and] being capable of changing its resistance value, [.] wherein a voltage for operating the IC is [are] varied depending on the resistance value of the resistance element.